



Translation

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 536060WO01	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP2002/007107	International filing date (day/month/year) 12 July 2002 (12.07.2002)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC B23H 1/02		
Applicant MITSUBISHI DENKI KABUSHIKI KAISHA		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 16 sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 06 August 2003 (06.08.2003)	Date of completion of this report 19 May 2004 (19.05.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2002/007107

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

 the international application as originally filed the description:pages 1-11, 15, 17-22, 24-26, 28, 30-32, 34-47, as originally filed

pages \_\_\_\_\_, filed with the demand

pages 12-14, 14/1, 16, 16/1, 23, 27, 29, 33, filed with the letter of 21 January 2004 (21.01.2004) the claims:pages 3, 4, 6-9, 11-14, as originally filed

pages \_\_\_\_\_, as amended (together with any statement under Article 19)

pages \_\_\_\_\_, filed with the demand

pages 1, 2, 5, 10, filed with the letter of 21 January 2004 (21.01.2004) the drawings:pages 1-18, 20-22, as originally filed

pages \_\_\_\_\_, filed with the demand

pages 19, filed with the letter of 21 January 2004 (21.01.2004) the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages \_\_\_\_\_ the claims, Nos. \_\_\_\_\_ the drawings, sheets/fig \_\_\_\_\_5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP02/07107

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	4, 7-9, 11-14	YES
	Claims	1-3, 5, 6, 10	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

## 2. Citations and explanations

Document 1: US, 5064984, A1 (MITSUBISHI ELECTRIC CORPORATION), 12 November 1991  
& JP, 3-104517, A

Document 2: JP, 6-141542, A (FANUC LTD.), 20 May 1994

The subject matter of claims 1-3, 5, 6, and 10 does not involve an inventive step on account of document 1 cited in the ISR and document 2 cited in the ISR. In order to solve the well-known problem of reducing transition loss and continuity loss, employing what is described in document 2—a field effect transistor and an insulated gate bipolar transistor connected to this in parallel and having an overlap time period after the field effect transistor starts operating and performing a switching operation—instead of document 1's switching element and arriving at the invention of claims 1, 2, 5, and 6 would be easy for a person skilled in the art. Also, when doing so, the question of whether or not to apply the detection signal directly to the switching element's control terminal is something to be appropriately selected by a person skilled in the art. Also, the means for changing and setting the pulse width for processing is merely a constitution that an ordinary discharge processing device has.

The subject matter of claims 4, 7-9, and 11-14 is not described in any of the documents cited in the ISR and appears to be non-obvious to a person skilled in the art.

Furthermore, the written opinion noted the point that document 2 pertains to an ordinary stabilized power source. But this point does not interfere with adding the invention described in document 2 to the invention described in document 1 in order to solve problems related to a switching element, i.e. reducing transition loss and continuity loss. Also, it is asserted that the invention of claim 10 is one in which the changed pulse width is the pulse width of the signal that drives the second switching element, but this assertion is not based on the text of the claim.